

PUBLIC HEALTH REPORT

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CALIFORNIA PHYSICIANS have been among the first to recognize that the prevention of air pollution is necessary for healthful life in cities. Local and state governments in California were among the first to propose remedies.

However, these remedies are sometimes complicated, costly and slow; occasionally they are uncertain. Eye and respiratory tract irritations are frequent effects of pollution with photochemicals. Many patients turn to their physicians because of these symptoms. Greater public understanding of these and other air pollution effects is essential to progress in air pollution control.

Since 1954, the State Department of Public Health and air pollution control districts have carried out monitoring programs which measure potentially harmful pollutants. These include carbon monoxide, oxidants, oxides of nitrogen and particulates. In addition the department in conjunction with medical scientists has carried out a program of laboratory and epidemiologic research.

Sufficient data have been collected about the effects of certain pollutants to permit the Health Department to set sound air quality standards. These standards are the basis for the present controls over motor vehicle emissions. These controls are increasingly being adopted, with some modifications, in other parts of the nation and of the world. This year, because of them and despite the increase in motor vehicle usage, emissions of carbon monoxide and hydrocarbons are decreasing in California.

As effects that pollutants may have on health, we now recognize the possibility of acute illness or death; the possibility of production of chronic disease; interference with important functions of the body; sensory irritation, and discomfort, annoyance, and impairment of visibility.

Air pollution during the acute episodes in California so far has not significantly increased mor-

talidity. This is unlike findings in eastern United States, Europe and Japan. While a specific acute illness associated with air pollution has not been shown, the aggravation of bronchitis and, of course, eye and respiratory symptoms are very well known.

A survey in Los Angeles, carried out jointly by the Los Angeles County Medical Association and the Tuberculosis and Health Association, indicated that almost ten thousand persons have been advised by their physicians to consider leaving the area because of the health hazards of community air pollution.

Control of motor vehicle exhaust is not the only approach to preventing air pollution of the kind that affects health. Controls for industrial emission are well developed in Los Angeles and are also being applied by local control districts in other parts of the state, in many cases with the advice and support of local health departments and medical societies. The control of incineration remains a matter of serious concern but incineration of garbage and other wastes is, except for the air pollution it causes, one of the more attractive ways of disposal. In the absence of this method additional steps are needed to manage the larger volume of material. Thus the air pollution problem is linked with the problem of disposal of garbage and of agricultural and industrial waste as well.

Another contributor to community air pollution is the combustion of fuel in power plants and for household heating. In other parts of the world, particularly London, the use of soft coal produces large amounts of particulate matter and some sulfuric acid and sulfur dioxide which are the major elements in the air pollution problem in the United Kingdom and in many other countries.

In California the major problems of air pollution from power plants derive from the combustion of sulfur-containing fuel oil, the effluents of which

tend to affect the areas downwind of the power plants. This is particularly a problem where the area downwind is residential.

Not only human health but also crops and ornamental plants are affected by air pollution. In the Los Angeles area it is no longer possible to grow lettuce, spinach, certain types of beans and tomatoes because these crops are badly damaged by the concentrations of air pollution that occur there. In some parts of the state alfalfa can no longer be grown, and there is accumulating evidence that photochemical pollution has a harmful effect on citrus fruit trees.

Concern about plant damage arises for several reasons. If the quality of the crop is impaired by air pollution, the food supply is diminished. Some of the biochemical pathways of vegetation damage are similar to those of damage to humans and other animal species; hence, insight into the biochemistry of air pollution reactions is helped by the study of vegetation damage. Economic loss through inability to grow certain types of crops in urban areas is considerable.

Among the many problems that air pollution poses for practicing physicians is how to prevent or treat the reactions observed in patients. Reactions are particularly likely to occur in persons with chronic respiratory conditions. The use of bronchodilating drugs may successfully counter the airway's reaction to inhaled irritants. Such drugs do not interfere with the perception of irritation nor with eye irritation.

It is possible to remove the irritants by filtering the air supply of hospitals, homes and automobiles through activated charcoal filters. These filters absorb and remove oxidants and ozone.

Some physicians may not be aware of an additional effect of air pollution, since their patients do not complain of it. This is the effect of carbon monoxide pollution on increasing carboxyhemoglobin, which interferes with the oxygen transport function of the blood. In certain parts of the state there has been enough carbon monoxide in the air to inactivate 5 per cent of the circulating hemoglobin. This will affect most persons adversely and poses a special threat to those with vascular disease.

Such pollution generally occurs during the winter months when it is important to be particularly attentive to oxygenation of patients who have vascular accidents or who are recovering from surgical operation. Additional oxygen in the air supply will speed up the release of carbon monoxide combined with hemoglobin.

Control of emissions at their source remains the most dependable measure for preventing damage to health from air pollution, and the understanding and support of physicians in this effort is of great importance.

The State Department of Public Health has been asked by many persons who plan to move to California, or who are already living here, where they might move in order to avoid the health hazards of community air pollution. Such requests also, no doubt, come to physicians.

While we must respond to these inquiries, and of course we will do so, it will be an admission of inadequacy if we are unable to make all of our cities in our state a place where people can live in health and security. It is a major goal of the department to continue its studies and other efforts toward air pollution control.

